AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A tissue engineered construct analytical imaging system for use in connection with at least one culture well having a tissue engineered construct therein and positionable in an enclosed environment, the system comprising:

an imaging device positioned within the enclosed environment and configured to obtain three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment; and

a computer controller configured to at least one of:

(i) receive data from the imaging device;

(ii) analyze the data for determining at least one ~~desired parameter within the well area of interest~~ of the following: matrix organization, matrix compaction, matrix contraction, response to loading, or any combination thereof; and

(iii) output data reflecting results of an analysis;

wherein the tissue engineered construct is at least one of the following: a bioartificial cellular tissue construct, bioartificial tissue, and a bioartificial tendon.

2. (Original) The system of claim 1, wherein the imaging device is at least one of a camera, a digital camera, a scanner, a scanning device, a plurality of cameras, a video camera, a digital video camera and a device capable of capturing an image.

3. (Original) The system of claim 1, wherein the computer controller is at least one of a computing device, a computer, a personal computer, a controller, a circuit board, a laptop, a personal digital assistant, a networked computer and a server.

4. (Original) The system of claim 1, wherein the computer controller is further configured to control a mechanical loading mechanism for loading the tissue engineered construct.

5. (Original) The system of claim 1, wherein the at least one culture well is positionable upon the imaging device.

6. (Cancelled)

7. (Original) The system of claim 1, wherein the well area of interest includes at least the tissue engineered construct in the culture well.

8. (Previously Presented) The system of claim 1, wherein the computer controller is further configured to at least one of expand, contract, manipulate, modify, or any combination thereof, the well area of interest.

9. (Original) The system of claim 1, wherein data reflecting a plurality of well areas of interest is obtained by the imaging device.

10. (Cancelled)

11. (Original) The system of claim 1, wherein data reflective of a plurality of well areas of interest is obtained by the imaging device for a respective plurality of culture wells positioned within the enclosed environment.

12.-17. (Cancelled)

18. (Previously Presented) The system of claim 1, further comprising a storage device in communication with the computer controller and configured to store at least one of the following: data, image data, well culture data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, analog input data, or any combination thereof.

19. (Original) The system of claim 1, further comprising an input device in communication with the computer controller and configured to transmit user input commands to the computer controller.

20. (Previously Presented) The system of claim 1, further comprising a display device in communication with the computer controller and configured to display at least one of the following: data, image data, well culture data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, analog input data, user input data, graphical data, analytical results, images, or any combination thereof.

21. (Cancelled)

22. (Original) The system of claim 1, wherein, after the data is obtained by the imaging device and received by the computer controller, a user can manipulate at least one of the well area of interest and a construct area of interest for use in further data collection for the at least one well culture.

23. (Original) The system of claim 1, wherein the computer controller is further configured to uniquely identify a culture well in a plurality of culture wells.

24. (Cancelled)

25. (Original) The system of claim 1, wherein the well area of interest includes a construct area of interest, and wherein the desired parameter analyzed is the area of the tissue engineered construct within the construct area of interest.

26.-30. (Cancelled)

31. (Original) The system of claim 1, wherein the tissue engineered construct is cells cultured in a three-dimensional collagen gel.

32. (Original) The system of claim 1, wherein the tissue engineered construct is anchored within the culture well on at least two ends thereof.

33.-35. (Cancelled)

36. (Currently Amended) A computer-implemented method of obtaining and analyzing images of a tissue engineered construct, the method comprising:

(a) positioning at least one culture well having the tissue engineered construct therein in an enclosed environment; ~~and~~

(b) obtaining, from an imaging device positioned within the enclosed environment, three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment, and wherein the tissue engineered construct is at least one of the following: a bioartificial cellular tissue construct, bioartificial tissue, and a bioartificial tendon;

(c) analyzing the three-dimensional image; and

(d) determining at least one of the following: matrix organization, matrix compaction, matrix contraction, response to loading, or any combination thereof.

37. (Previously Presented) The method of claim 36, further comprising receiving the data reflective of the well area of interest.

38. (Previously Presented) The method of claim 36, further comprising:

analyzing the data; and

based upon this analysis, determining at least one desired parameter within the well area of interest based upon the data.

39. (Previously Presented) The method of claim 36, further comprising outputting data reflecting results of the analysis.

40. (Cancelled)

41. (Previously Presented) The method of claim 36, further comprising controlling a mechanical loading mechanism for loading the tissue engineered construct.

42. (Cancelled)

43. (Previously Presented) The method of claim 36, further comprising at least one of the following: expanding, contracting, manipulating, modifying, or any combination thereof, the well area of interest.

44. (Previously Presented) The method of claim 36, further comprising obtaining data reflecting a plurality of well areas of interest.

45. (Cancelled)

46. (Previously Presented) The method of claim 36, further comprising obtaining data reflective of a plurality of well areas of interest for a respective plurality of culture wells positioned within the enclosed environment.

47.-52. (Cancelled)

53. (Previously Presented) The method of claim 36, further comprising displaying at least one of the following: data, image data, well culture data, stored data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, analog input data, user input data, graphical data, analytical results, images, or any combination thereof.

54. (Previously Presented) The method of claim 36, wherein, after the data is obtained, the method further comprising manipulating at least one of the well areas of interest and a construct area of interest for use in further data collection for the at least one well culture.

55. (Previously Presented) The method of claim 36, further comprising uniquely identifying a culture well in a plurality of culture wells.

56.-64. (Cancelled)

65. (Previously Presented) The method of claim 36, wherein, prior to positioning the at least one culture well in the enclosed environment, the method further comprises anchoring the tissue engineered construct within the culture well on at least two ends thereof.

66. (Previously Presented) The method of claim 36, wherein the data reflective of the well area of interest is at least one of the following: imaging data, visual data, visible light data, infrared data, ultraviolet data, magnetic resonance engineering data, computer tomography data, radiation data, x-ray data, or any combination thereof.

67. (Previously Presented) The method of claim 36, wherein the data is a digital image, the method further comprising pre-defining the desired resolution of the digital image.

68. (Cancelled)

69. (Currently Amended) A tissue engineered construct imaging and analysis apparatus for use in connection with at least one culture well having tissue engineered constructs therein and positionable in an enclosed environment, the apparatus comprising:

imaging means positionable in the enclosed environment and for obtaining three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment, and wherein the tissue engineered construct is at least one of the following: a bioartificial cellular tissue construct, bioartificial tissue, and a bioartificial tendon; and

computing means for receiving and analyzing the three-dimensional data, and determining at least one of the following: matrix organization, matrix compaction, matrix contraction, response to loading, or any combination thereof.

70. (NEW) A tissue engineered construct analytical imaging system for use in connection with at least one culture well having a tissue engineered construct therein and

positionable in an enclosed environment, the system comprising:

an imaging device positioned within the enclosed environment and configured to obtain three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment, wherein the tissue engineered construct is anchored on at least two edges thereof;

a mechanical loading mechanism configured to apply a load to the tissue engineered construct; and

a computer controller configured to:

(i) receive data from the imaging device;

(ii) analyze the data and determine a response to a load applied by the mechanical loading mechanism to the tissue engineered construct within the well area of interest; and

(iii) output data reflecting results of the analysis.

71. (NEW) A computer-implemented method of obtaining and analyzing images of a tissue engineered construct, the method comprising:

(a) positioning at least one culture well having the tissue engineered construct therein in an enclosed environment;

(b) anchoring the tissue engineered construct on at least two edges thereof;

(c) applying a load to the tissue engineered construct;

(d) obtaining three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment;

(e) analyzing the three-dimensional data; and

(f) determining a response to the applied load.

72. (NEW) A tissue engineered construct imaging and analysis apparatus for use in connection with at least one culture well having tissue engineered constructs therein and positionable in an enclosed environment, the apparatus comprising:

imaging means positionable in the enclosed environment and for obtaining three-dimensional image data reflective of at least a portion of the tissue engineered construct

in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment, wherein the tissue engineered construct is anchored on at least two edges thereof;

loading means for applying a load to the tissue engineered construct; and

computing means for receiving and analyzing the three-dimensional data, and determining a response to the applied load.